

Case 3189

Ammotrecha* Banks, 1900 and *Ammotrechula* Roewer, 1934 (Arachnida, Solifugae): proposed conservation by the designation of *Galeodes limbata* Lucas, 1835 as the type species of *Ammotrecha*; and *Eremobates* Banks, 1900 and *Eremorhax* Roewer, 1934: proposed conservation by the designation of *Galeodes pallipes* Say, 1823 as the type species of *Eremobates

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Abstract. One purpose of this application is to conserve the names *Ammotrecha* Banks, 1900 and *Ammotrechula* Roewer, 1934 (family AMMOTRECHIDAE) for two genera of solifuges (camel spiders or sun spiders) from Central America and Mexico. At present *Cleobis saltatrix* Simon, 1879 is the valid type species of both genera. It is proposed that *Galeodes limbata* Lucas, 1835 be confirmed as the type species of *Ammotrecha*, following the universal acceptance of this species as the type. It is also proposed that the names *Eremobates* Banks, 1900 and *Eremorhax* Roewer, 1934 (family EREMOBATIDAE) be conserved for two genera of solifuges from the southern United States and Mexico. *Datames formidabilis* Simon, 1879, which is currently included in *Eremorhax*, is the valid type species of *Eremobates*. It is proposed that *Galeodes pallipes* Say, 1823 be confirmed as the type species of *Eremobates* in accordance with the accustomed understanding of the genus.

Keywords. Nomenclature; taxonomy; Arachnida; Solifugae; Solpugida; AMMOTRECHIDAE; EREMOBATIDAE; *Ammotrecha*; *Ammotrechula*; *Eremobates*; *Eremorhax*; *Ammotrecha limbata*; *Ammotrechula saltatrix*; *Eremobates pallipes*; *Eremorhax formidabilis*; solifuges; solpugids; camel spiders; sun spiders; Central America; North America; Mexico.

1. This application concerns the current understanding of two pairs of solifuge generic names, *Ammotrecha* Banks, 1900 and *Ammotrechula* Roewer, 1934, and *Eremobates* Banks, 1900 and *Eremorhax* Roewer, 1934. For each pair the nomenclature would be upset by the recognition of type species designations made by Simon (1879) and, in the case of *Eremobates*, by a further designation by Pocock (1902). The status of each pair of names is considered in turn and Commission action is proposed to conserve the names in their accustomed usage.

A. *Ammotrecha* Banks, 1900 and *Ammotrechula* Roewer, 1934 (family AMMOTRECHIDAE)

2. The solifuge genus *Cleobis* was originally described by Simon (1879, p. 145; ref. 1879a) with five included species: *Cleobis saltatrix* Simon, 1879 (p. 146; ref. 1879a),

Galeodes limbata Lucas, 1835a (pl. 5 and text; ref. 1835a), *Galeodes cubae* Lucas, 1835b (ref. 1835b), *Solpuga gryllipes* Gervais, 1842 and *Galeodes morsicans* Gervais, 1849, but the last two species were only doubtfully included in the genus. Simon (1879a) did not designate a type species for *Cleobis* but, later that year in a note listing species of Solifugae in vol. 7 of his *Les arachnides de France*, Simon (1879b, p. 78) designated *C. saltatrix* Simon, 1879 from Mexico as the type species. Although this designation is clearly valid (Article 69.1 of the Code), it seems to have been overlooked by subsequent workers and has not been mentioned or challenged by later workers, including Pocock (1895) and Kraepelin (1899, 1901) in their synoptic reviews.

3. Banks (1900, p. 426) noted that *Cleobis* Simon, 1879 was a junior homonym of *Cleobis* Dana, 1847 (Crustacea) and proposed the replacement name *Ammotrecha* Banks, 1900 for the solifuge genus. *Ammotrecha* is the type genus of the family AMMOTRECHIDAE Roewer, 1934.

4. Pocock (1902, p. 64), apparently unaware of Simon's (1879) type species designation, designated *Galeodes limbata* Lucas, 1835 as the type of *Ammotrecha* (and hence of *Cleobis* Simon; Article 67.8 of the Code). Pocock (p. 66) regarded *C. saltatrix* Simon, 1879 as a junior synonym of *G. limbata*, based upon remarks made by Kraepelin (1901), and it is equally possible that he was aware of Simon's (1879) action and simply cited the senior synonym. *Cleobis saltatrix* was subsequently removed from synonymy and treated as a distinct species by Roewer (1934), who designated it as the type species of his new genus *Ammotrechula* Roewer, 1934 (p. 600, figs. 335e, 335i). Muma (1970) redescribed the female syntype of *C. saltatrix* (housed in the Muséum National d'Histoire Naturelle, Paris), which he found conformed to current diagnoses of *Ammotrechula*. Pocock's (1902) type species designation for *Ammotrecha* has been followed by all subsequent workers, including Roewer (1934, p. 596), Muma (1951, p. 123) and others. The syntypes (one male and one female) of *G. limbata* are possibly mislaid, or are unlabelled and hence unrecognizable as types amongst the collection of the Paris Museum; however, the identity of the taxon is not in doubt.

5. Of the other species included in *Cleobis* by Simon (1879, ref. 1879a), *Galeodes cubae* was designated the type species of *Ammotrechona* Roewer, 1934 by Roewer (1934), *Solpuga gryllipes* Gervais, 1842 was designated the type species of *Ammotrechinus* Roewer, 1934 by Roewer (1934), and *G. morsicans* Gervais, 1849 was transferred to *Pseudocleobis* Pocock, 1900 by Kraepelin (1901). The selection of any of these species as the type species of *Ammotrecha* would result in significant nomenclatural changes.

6. Under the Code, recognition of Simon's (1879) designation of *Cleobis saltatrix* as the type species of *Ammotrecha* Banks, 1900 would cause considerable nomenclatural changes; the name *Ammotrechula* Roewer, 1934 would be lost as a junior synonym of *Ammotrecha*, and *Ammotrechula saltatrix* and the other 13 species currently included in *Ammotrechula* would be known by the name *Ammotrecha*. This would leave the nine species currently included in *Ammotrecha* without a valid generic name, and a new name would be needed for them.

7. The names *Ammotrecha* and *Ammotrechula* have been used in many recent publications. A representative list of those not already cited includes Roewer (1954), Muma (1971, 1976, 1986, 1987) and Armas (1993) for *Ammotrecha*, and Muma (1976, 1987, 1989) and Armas (1993) for *Ammotrechula*. In the interests of nomenclatural

stability, I propose that Simon's (1879) type species designation for *Ammotrecha* be set aside and *Galeodes limbata* Lucas, 1835 be confirmed as the type species by subsequent designation by Pocock (1902). These actions will allow accustomed usages of both names *Ammotrecha* and *Ammotrechula* to continue unhindered.

B. *Eremobates* Banks, 1900 and *Eremorhax* Roewer, 1934 (family EREMOBATIDAE)

8. The solifuge genus *Datames* was established by Simon (1879, p. 133; ref. 1879a) for nine species of solifuges from the U.S.A. and Mexico, none of which was selected as the type species: *Datames formidabilis* Simon, 1879 (ref. 1879a), *Gluvia geniculata* C.L. Koch, 1842, *Galeodes pallipes* Say, 1823 (p. 3, footnote), *Datames sulfureus* Simon, 1879a and *Datames californicus* Simon, 1879a, and four doubtfully included species, *Gluvia praecox* C.L. Koch, 1842, *Gluvia cinerascens* C.L. Koch, 1842, *Gluvia gracilis* C.L. Koch, 1842 and *Gluvia formicarius* C.L. Koch, 1842. Later that year in a list of solifuge genera published (p. 78) in vol. 7 of *Les arachnides de France*, Simon (1879b) designated *Datames formidabilis* Simon, 1879a from Mexico as the type species of *Datames*.

9. Banks (1900, p. 426) noted that *Datames* Simon, 1879 was a junior homonym of *Datames* Stål, 1875 (Insecta) and proposed the replacement name *Eremobates* Banks, 1900 for the solifuge genus. *Eremobates* Banks is the type genus of EREMOBATINAE Kraepelin, 1901 (family SOLPUGIDAE), which was first elevated to family rank by Roewer (1934).

10. Apparently unaware of Simon's (1879b) type designation, Pocock (1902, p. 59) designated *Gluvia cinerascens* C.L. Koch, 1842 (p. 355) from Mexico as the type species of *Eremobates*, noting that Simon (1879a) had misidentified the male(s) but correctly identified the female(s) of *Datames pallipes* (Say, 1823). Roewer (1934, p. 555) listed *D. pallipes* as the type species of *Eremobates*, and placed *G. cinerascens* in a new genus. Roewer's (1934) type designation for *Eremobates* has been followed by other authors, including Muma (1951). Muma (1951, p. 72) synonymised *G. cinerascens* with *D. pallipes* which he later confirmed (Muma, 1970). The holotype of *G. cinerascens* is a male specimen (catalogue no. ZMB 188) in the Zoologisches Museum, Berlin, as recorded by Moritz & Fischer (1980, p. 140). Brookhart & Muma (1981, p. 292) designated a male specimen from Highway 205c, Byers, Arapahoe County, Colorado, U.S.A. and deposited in the American Museum of Natural History, New York, as the neotype of *D. pallipes*.

11. Muma (1951, p. 92) established the new species *Therobates bilobatus*, now placed in the genus *Eremochelis* Roewer, 1934, for specimens misidentified as *Datames pallipes* (Say) by Simon (1879a), Banks (1900), Kraepelin (1901) and Roewer (1934).

12. *Datames formidabilis* Simon, 1879 is currently included in the genus *Eremorhax* Roewer, 1934 (p. 553) with the type species *Datames magna* Hancock, 1888 (p. 107, figs. A, B, a–h) (Harvey, in press). Despite the confused history of the identity of many North American solifuge species described in the 19th century it is clear that, if Simon's (1879) designation of *D. formidabilis* as the type species of *Eremobates* Banks, 1900 is left unchallenged, then the name *Eremorhax* becomes a junior synonym of *Eremobates*, and all species currently included in *Eremorhax* would be known as *Eremobates*. In addition, all species currently included in *Eremobates* would take the next available name, *Eremoperna* Roewer,

1934, which is currently treated (see Muma, 1951, p. 51) as a junior synonym of *Eremobates*.

13. Both the names *Eremobates* and *Eremorhax* are in current usage. A representative list of publications includes Fichter (1940), Cloudsley-Thompson (1968, 1977), Brookhart (1972), Muma (1974a, 1974b, 1975a, 1975b, 1976, 1985, 1989), Brookhart & Muma (1981), Rowland & Reddell (1976) and Punzo (1998) for *Eremobates*, and Roewer (1952), Muma (1966a, 1966b, 1966c, 1967, 1974a, 1976, 1987), Rowland & Reddell (1976) and Punzo (1993, 1995, 1998) for *Eremorhax*. Therefore, in the interest of nomenclatural stability, I propose that the type designation for *Eremobates* Banks, 1900 made (under Article 67.8 of the Code) by Simon (1879b) be set aside, and that *Galeodes pallipes* Say, 1823 be confirmed as the type species following the designation by Roewer (1934). This will allow the accustomed usages of the names *Eremobates* and *Eremorhax* Roewer, 1934 to continue. Although preceded by type designations by Simon (1879b) and by Pocock (1902) and therefore invalid, Roewer's (1934) type designation was of a species originally included in *Datames* (= *Eremobates*) and it has been followed by subsequent authors.

14. The International Commission on Zoological Nomenclature is accordingly asked:
(1) to use its plenary power to set aside all previous fixations of type species for the following nominal genera:

- (a) *Ammotrecha* Banks, 1900 (= *Cleobis* Simon, 1879) prior to the designation by Pocock (1902) of *Galeodes limbata* Lucas, 1835;
- (b) *Eremobates* Banks, 1900 (= *Datames* Simon, 1879) prior to the designation by Roewer (1934) of *Galeodes pallipes* Say, 1823;

(2) to place on the Official List of Generic Names in Zoology the following names:

- (a) *Ammotrecha* Banks, 1900 (gender: feminine), type species by subsequent designation by Pocock (1902) *Galeodes limbata* Lucas, 1835, as ruled in (1)(a) above;
- (b) *Ammotrechula* Roewer, 1934 (gender: feminine), type species by original designation *Cleobis saltatrix* Simon, 1879;
- (c) *Eremobates* Banks, 1900 (gender: masculine), type species by subsequent designation by Roewer (1934) *Galeodes pallipes* Say, 1823, as ruled in (1)(b) above;
- (d) *Eremorhax* Roewer, 1934 (gender: masculine), type species by monotypy *Datames magna* Hancock, 1888;

(3) to place on the Official List of Specific Names in Zoology the following names:

- (a) *limbata* Lucas, 1835, as published in the binomen *Galeodes limbata* (specific name of the type species of *Ammotrecha* Banks, 1900);
- (b) *saltatrix* Simon, 1879, as published in the binomen *Cleobis saltatrix* (specific name of the type species of *Ammotrechula* Roewer, 1934);
- (c) *pallipes* Say, 1823, as published in the binomen *Galeodes pallipes* and as defined by the neotype designated by Brookhart & Muma (1981) (specific name of the type species of *Eremobates* Banks, 1900);
- (d) *magna* Hancock, 1888, as published in the binomen *Datames magna* (specific name of the type species of *Eremorhax* Roewer, 1934);

(4) to place on the Official Index of Rejected and Invalid Generic Names in Zoology the following names:

- (a) *Cleobis* Simon, 1879 (Solifugae) (a junior homonym of *Cleobis* Dana, 1847);
- (b) *Datames* Simon, 1879 (Solifugae) (a junior homonym of *Datames* Stål, 1875).

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References

- Armas, L.F. de. 1993. Aracnidos de Nicaragua. 4. Nuevos solpugidos (Solpugida: Ammotrechidae). *Revista Nicaraguense de Entomología*, **26**: 39–56.
- Banks, N. 1900. Synopses of North-American invertebrates. IX. The scorpions, solpugids and pedipalpi. *American Naturalist*, **34**: 421–427.
- Brookhart, J.O. 1972. Solpugids (Arachnida) in Colorado. *Southwestern Naturalist*, **17**: 31–41.
- Brookhart, J.O. & Muma, M.H. 1981. The *pallipes* species-group of *Eremobates* Banks (Solpugida: Arachnida) in the United States. *Florida Entomologist*, **64**: 283–308.
- Cloudsley-Thompson, J.L. 1968. *Spiders, scorpions, centipedes and mites*. Pergamon Press, Oxford.
- Cloudsley-Thompson, J.L. 1977. Adaptational biology of Solifugae (Solpugida). *Bulletin of the British Arachnological Society*, **4**: 61–71.
- Fichter, E. 1940. Studies of North American Solpugida, I. The true identity of *Eremobates pallipes* (Say). *American Midland Naturalist*, **24**: 351–360.
- Hancock, J.L. 1888. Description of *Datames magna*. *Proceedings of the American Philosophical Society*, **25**: 107–110.
- Harvey, M.S. In press. Nomenclatural notes on Solifugae, Amblypygi, Uropygi and Araneae (Arachnida). *Records of the Western Australian Museum*.
- Koch, C.L. 1842. Systematische Uebersicht über die Familie der Galeoden. *Archiv für Naturgeschichte*, **8**: 350–356.
- Kraepelin, K. 1899. Zur Systematik der Solifugen. *Mitteilungen aus dem Naturhistorischen Museum in Hamburg*, **16**: 195–258.
- Kraepelin, K. 1901. Palpigradi und Solifugae. *Das Tierreich*, **12**: 1–159.
- Lucas, H. 1835a. Galéode. *Galeodes* Olivier. *Magasin de Zoologie*, **5**: Classe VIII, plate 5, text.
- Lucas, H. 1835b. Galéode. *Galeodes* Oliv. *Magasin de Zoologie*, **5**: Classe VIII, plate 11, text.
- Moritz, M. & Fischer, S.-C. 1980. Die Typen der Arachniden-Sammlung des Zoologischen Museums Berlin. II. Uropygi, Amblypygi, Schizomida, Ricinulei, Solifuga. *Mitteilung aus dem Zoologischen Museum in Berlin*, **56**: 137–154.
- Muma, M.H. 1951. The arachnid order Solpugida in the United States. *Bulletin of the American Museum of Natural History*, **97**: 35–141.
- Muma, M.H. 1966a. Burrowing habits of North American Solpugida (Arachnida). *Psyche*, Cambridge, **73**: 251–260.
- Muma, M.H. 1966b. Egg deposition and incubation for *Eremobates durangonus* with notes on the eggs of other species of Eremobatidae (Arachnida: Solpugida). *Florida Entomologist*, **49**: 23–31.
- Muma, M.H. 1966c. Feeding behavior of North American Solpugida (Arachnida). *Florida Entomologist*, **49**: 199–216.
- Muma, M.H. 1967. Basic behavior of North American Solpugida. *Florida Entomologist*, **50**: 115–123.
- Muma, M.H. 1970. A synoptic review of North American, Central American, and West Indian Solpugida (Arthropoda: Arachnida). *Arthropods of Florida and Neighboring Land Areas*, **5**: 1–62.
- Muma, M.H. 1971. The solpugids (Arachnida, Solpugida) of Chile, with descriptions of a new family, new genera, and new species. *American Museum Novitates*, **2476**: 1–23.

- Muma, M.H. 1974a. An annotated list of solpugids (Arachnida) in New Mexico. *Bulletin of the New Mexico Academy of Science*, **15**(2): 13–16.
- Muma, M.H. 1974b. Maturity and reproductive isolation of common solpugids in North American deserts. *Journal of Arachnology*, **2**: 5–10.
- Muma, M.H. 1975a. Long term can trapping for population analyses of ground-surface, arid-land arachnids. *Florida Entomologist*, **58**: 257–270.
- Muma, M.H. 1975b. Two vernal ground-surface arachnid populations in Tularosa Basin, New Mexico. *Southwestern Naturalist*, **20**: 55–67.
- Muma, M.H. 1976. A review of solpugid families with an annotated list of western hemisphere solpugids. *Publication of the Office of Research, Western New Mexico University, Silver City*, **2**: 1–33.
- Muma, M.H. 1985. A new, possibly diagnostic, character for Solpugida (Arachnida). *Novitates Arthropodae*, **2**(2): 1–5.
- Muma, M.H. 1986. New species and records of Solpugida (Arachnida) from Mexico, Central America, and the West Indies. *Novitates Arthropodae*, **2**(3): 1–23.
- Muma, M.H. 1987. *New species and records of Solpugida (Arachnida) from Mexico, Central America, and the West Indies*. Southwest Offset, Silver City.
- Muma, M.H. 1989. *New species and records of Solpugida (Arachnida) from the United States*. Douglas Print Shop, Douglas.
- Pocock, R.I. 1895. Notes on some of the Solifugae contained in the collection of the British Museum, with descriptions of new species. *Annals and Magazine of Natural History*, (6)**16**: 74–98.
- Pocock, R.I. 1900. Some new or little-known Thelyphonidae and Solifugae. *Annals and Magazine of Natural History*, (7)**5**: 294–306.
- Pocock, R.I. 1902. Arachnida: Scorpiones, Pedipalpi, and Solifugae. *Biologia Centrali-Americana*, **3**: 1–71.
- Punzo, F. 1993. An analysis of free amino acids, neurotransmitters and enzymes in the nervous system of Solpugida (Arachnida). *Comparative Biochemistry and Physiology*, **106C**: 699–703.
- Punzo, F. 1995. Feeding and prey preparation in the solpugid, *Eremorhax magnus* Hancock (Solpugida: Eremobatidae). *Pan-Pacific Entomologist*, **71**: 13–17.
- Punzo, F. 1998. *The biology of camel-spiders (Arachnida, Solifugae)*. Kluwer Academic Publishers, Boston.
- Roewer, C.F. 1934. Solifugae, Palpigradi. Pp. 481–723 in Bronn, H.G. (Ed.), *Klassen und Ordnungen des Tierreichs*, Band 5 (Arthropoda), Abt. 4 (Arachnoidea). Akademische Verlagsgesellschaft, Leipzig.
- Roewer, C.F. 1952. Neotropische Arachnida Arthrogastra, zumeist aus Peru. *Senckenbergiana Biologica*, **33**: 37–58.
- Roewer, C.F. 1954. Spinnentiere aus El Salvador, I. (Arachnoidea: Pedipalpi, Solifuga, Opiliones-Laniatores). *Senckenbergiana Biologica*, **35**: 57–73.
- Rowland, J.M. & Reddell, J.R. 1976. Annotated checklist of the arachnid fauna of Texas (excluding Acarida and Araneida). *Occasional Papers of the Museum of the Texas Technical University*, **38**: 1–25.
- Say, T. 1823. *Account of an expedition from Pittsburgh to the Rocky Mountains, performed in the years 1819 and '20, by order of the Hon. J.C. Calhoun, Sec'y of War: under the command of Major Stephen H. Long*, vol. 2. Carey & Lea, Philadelphia.
- Simon, E. 1879a. Essai d'une classification des galéodes, remarques synonymiques et description d'espèces nouvelles ou mal connues. *Annales de la Société Entomologique de France*, (5)**9**: 93–154.
- Simon, E. 1879b. Les ordres des chernetes, scorpiones et opiliones. Pp. 1–332 in: *Les arachnides de France*, vol. 7. Librairie Encyclopédique de Roret, Paris.